

Amendments to the Claims:

This listing of the claims replaces all prior versions and listing of the claims in the present application.

Listing of Claims:

1. (currently amended) A method for manufacturing a semiconductor device that has a substrate with an interlayer insulation film thereon, the interlayer insulation film having therein a contact hole, a via hole, or a trench for a plug electrode or buried wiring, wherein the contact hole, via hole, or trench is lined with a tantalum oxide film, a tantalum-base barrier film, an amorphous metal film, and a copper-based conductive film and is filled with the copper-based conductive film to form a plug electrode or buried wiring, the method comprising the steps of:

preparing a semiconductor substrate, formed in which is the interlayer insulation film provided with the contact hole, via hole, or trench;

forming the tantalum-base barrier film in the contact hole, via hole or trench;

forming the copper-based conductive film on the tantalum-base barrier film; and

~~heat treating the semiconductor substrate with the tantalum base barrier film and the copper base conductive film in a non oxidizing atmosphere,~~

forming the tantalum oxide film ~~being formed~~ between the interlayer insulation film and the tantalum-base barrier film at an interface surface therebetween[[,]] and at a same time forming the amorphous metal film comprising tantalum and copper ~~being formed~~ between the tantalum-base barrier film and the copper-based conductive film at an interface surface therebetween by heat treating the semiconductor substrate with the tantalum-base barrier film and the copper-based conductive film in a non-oxidizing atmosphere.

2. (original) A manufacturing method of the semiconductor device, according to claim 1, wherein:

in the step of heat-treating said semiconductor device, said semiconductor device is a heat-treated at a heat-treatment temperature of from 400 to 700°C for a heat-treatment period of from 2 to 20 minutes.

3. (original) The method according to claim 1, wherein the copper-based conductive film is formed by using a first step of forming a copper-based thin film on the tantalum-base barrier film, and a second step of forming a copper-based thick film on the copper-based thin film.